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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,439	08/24/2001	Robin Levonas	060705-1830	2762

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EXAMINER

PHAM, TUAN

ART UNIT	PAPER NUMBER
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2643

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DATE MAILED: 03/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/939,439

Applicant(s)

LEVONAS ET AL.

Examiner

TUAN A PHAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 11-16 and 21-26 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No.6.
2. This application contains claims 1-10 and 17-20 drawn to an invention nonelected with traverse in Paper No.6. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-10 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (U.S. Patent No. 6,256,383).

Regarding claim 1, Chen teaches a transceiver (i.e. automatic balance system) (see figure 1, automatic balance system 10, col.5, ln.6-10), comprising:

means for receiving a locally generated transmit signal (see figure 1, telephone receive the locally signal from 2 to 4 wire hybrid);

means for coupling the locally generated transmit signal to a communication medium (see figure 1, telephone couple to hybrid by telephone line), the means for coupling further coupled to a remotely generated receive signal (see figure 1, remote side including FIR and IIR filter); and

means for recovering the remotely generated receive signal configured to reduce both short-term echo components and long-tail echo components of the locally generated transmit signal wherein the reduction of transmit signal echo is realized in a hybrid echo canceller (see figure 1, automatic balance system 10, col.3, ln.10-42, col.5, ln.6-10).

Regarding claim 2, Chen further teaches the transceiver wherein the means for recovering comprises a multi-stage digital filter (see figure 1, FIR filter 32, IIR filter 40).

Regarding claim 3, Chen further teaches the transceiver further comprising:  
means for determining the length in taps of the digital filter required to reduce the

short-term echo components, and means for bifurcating the multi-stage digital filter responsive to the determination means (see col.6, ln.14-38).

Regarding claim 4, Chen further teaches the transceiver wherein the multi-stage digital filter comprises a dual-stage finite impulse response (FIR) filter (see figure 1, FIR filter 32, IIR filter 40).

Regarding claim 5, Chen further teaches the transceiver wherein the multi-stage digital filter comprises a first stage that applies coefficients derived for each tap of the first stage and a second stage that derives coefficient values for a subset of the taps of the second stage (see col.7, ln.4-51).

Regarding claim 6, Chen further teaches the transceiver wherein the second stage applies a coefficient value to each tap (see col.8, ln.25-67).

Regarding claim 7, Chen further teaches the transceiver wherein the second stage derives coefficient values for each K<sup>th</sup> tap (see col.6, ln.15-30, K=number of taps).

Regarding claims 8, 9, and 10, Chen further teaches the transceiver wherein the second stage uses an interpolation scheme to determine coefficients to apply at each of the taps disposed between taps associated with a derived coefficient (see col.2, ln.28-35, col.7, ln.5-50, estimate coefficients between each taps).

Regarding claim 17, Chen teaches a digital signal transceiver (i.e. automatic balance system), comprising:

a transmitter configured to receive a locally generated transmit signal (see figure 1, transmit signal (y));

a hybrid electrically coupled to the transmitter configured to receive and inductively couple the transmit signal to a two-wire transmission line, the hybrid further configured to receive a remotely generated receive signal along the two-wire transmission line (see figure 1, 2 to 4 wire hybrid 24);

a receiver configured to process the remotely generated receive signal (see figure 1, receive signal (x)); and

a an echo canceller disposed in parallel between the transmitter and the receiver configured to reduce both short-term echo components and long-tail echo components of the locally generated transmit signal wherein the echo canceller calculates coefficient values for less than N taps while emulating a N tap digital filter (see figure 1, FIR filter, col.3, ln.10-32, col.7, ln.5-50).

Regarding claim 18, Chen further teaches the transceiver wherein the echo canceller comprises a bifurcated digital filter that adaptively calculates and applies tap coefficients to each of a plurality of filter taps in a first stage and adaptively calculates and applies a subset of tap coefficient values to a plurality of filter taps in a second stage (see col.7, ln.3-50).

Regarding claim 19, Chen further teaches the transceiver wherein the digital filter adaptively calculates a tap coefficient value for a first tap of the second stage and every k<sup>th</sup> tap thereafter (see col.7, ln.3-50).

Regarding claim 20, Chen further teaches the transceiver wherein the digital filter interpolates the calculated tap coefficient values for the second stage to identify

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coefficient values to apply at taps disposed between taps associated with a calculated tap coefficient (see col.2, ln.28-35, col.7, ln.3-50).

### **Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In order to expedite the prosecution of this application, the applicants are also requested to consider the following references. Although Reesor et al. (U.S. Patent No. 6,282,286), Koike (U.S. Patent No. 5,084,865), and Osovets (U.S. Patent No. 6,442,272) are not applied into this Office Action, they are also called to Applicants attention. They may be used in future Office Action(s). These references are also concerned for supporting the system and method echo canceller having FIR and IIR filters for canceling long tail echoes and nonlinear processor for acoustic echo canceller with background noise preservation and long echo tail suppression.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan A. Pham** whose telephone number is (703) 305-4987 and E-mail address is: **tuan.pham@USPTO.GOV**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Curtis Kuntz, can be reached on (703) 305-4708 and

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Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

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Washington, D.C. 20231

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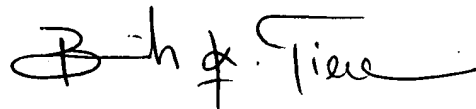
Drive, Arlington VA, Sixth Floor (Receptionist, tel. No. 703-305-4700).

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Date: February 28, 2004

Examiner

Tuan Pham

A handwritten signature in black ink, appearing to read "Binh Tieu", with a stylized flourish at the end.

**BINH TIEU**  
**PRIMARY EXAMINER**